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ABSTRACT

A model of innovation adoption process, the Concerns-Based Adoption Model (CBAM), has been developed from empirical evidence. The CBAM depicts innovation adoption in educational institutions as a developmental process in which each user of the innovation demonstrates successively higher qualities of use of the innovation. The CBAM also depicts innovation adoption as a process capable of being facilitated by trained adoption agents who pace and personalize their interventions on the basis of the assessed personal needs and motivations of the individual adopters. By being sensitive to the concerns of users and by seeing the use of an innovation as a developmental process, adoption agents are expected to be able to reduce the threat which change poses to individuals and to increase the likelihood of an educational institution integrating an innovation at a high quality level of use. (HMD)

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A DEVELOPMENTAL CONCEPTUALIZATION OF THE ADOPTION PROCESS WITHIN EDUCATIONAL INSTITUTIONS

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A DEVELOPMENTAL CONCEPTUALIZATION OF THE ADOPTION PROCESS WITHIN EDUCATIONAL INSTITUTIONS[1,2]

John Goodlad said it efficiently when he wrote that the innovations of the 60's have been "blunted on the classroom door."[3] The educational experience of the past decade clearly documents that mere existence of educational innovations does not guarantee their use. This failure of educational innovations to achieve widespread adoption[4] poses problems that must be addressed.

During the past decade a multitude of publications dissected the educational change process, describing the fabrication of new change models and examining old ones. Cursory examination of Rogers'[5] work, of Havelock's[6] massive review and synthesis of the change literature, and of Maguire's[7] review provides immediate perspective on the enormous amount of data and number of models available to stimulate the planning of educational change. Why then have schools, colleges, and universities remained generally untouched by many of the major thrusts of the reform movement?

Perhaps it is as Schmuck and Miles[8] suggested: that more attention needs to be placed on organizational development within an educational institution. Given a supportive environment, more effective means of communication, and the development of norms that support individual effort, innovations may take root, as some school-based organizational development studies indicate. Or it may be that the adoption of innovations has not been sufficiently examined as a developmental process in which the concerns

of the individual adopter and the relationship of these concerns to the use of the innovation play a major role.

The Complexity of Educational Innovation

Much of the study of diffusion and adoption processes has used agricultural innovation as the data source. These studies have yielded a rich library of information, but the nature of the innovations limits the usefulness of generalizing this knowledge to educational innovation adoption.

Adoption of innovations in education is seldom as simple as the introduction of a hybrid seed to an individual farmer. An individual teacher may use a curriculum innovation while the rest of the school system does not; or a school system may use an innovation but may still have individual classrooms or schools where the innovation is unused or is used in a manner not intended by the developer. Further, there are developmental stages in the use of an innovation in educational settings that must be attended to if adoption is to proceed effectively. For example, following the orientation and early trial phases, supportive training and consultation must be provided for teachers in order to sustain their movement toward full and effective use of a new curriculum. Within the formal organization of schools and colleges, the introduction of an innovation often results in major role changes for teachers and administrators; changes in role often require new professional and interpersonal skills as well as personal value changes. New organizational structures

may result directly from an innovation adoption. The relative position of individuals within the formal organization may shift, as in a hierarchical teaching team that includes a team leader, master teachers, and regular teachers. New priorities may be established within a school or college when an innovation is being adopted, resulting in a change in criteria for success and rewards.

In short, the adoption of an educational innovation is a complex process involving a multitude of variables.

The Concerns-Based Adoption Model in Relation to Educational Change Models

Havelock[9] has classified the change literature into three schools of thought: (1) the Research, Development, and Diffusion Perspective; (2) the Social Interaction Perspective; and (3) the Problem-Solver Perspective. The Research, Development, and Diffusion Perspective is typical of the developer who creates, tests, and disseminates a solution to a problem that he perceives in a target population. The Social Interaction Perspective is primarily concerned with the spread of an existing innovation through a group or social system from the point of view of a change agent. The Problem Solver Perspective places emphasis on the ultimate users of an innovation who first identify, then clarify their problem, and select an appropriate solution; from this perspective the focus is upon the development of problem-solving capabilities in organizations.

Havelock found deficiencies in each of the perspectives and proceeded to synthesize the best features of the three approaches into a concept he

calls "linkage." Linkage is a change model that does not initially require the use of a specific innovation. Linkage models emphasize the development of skills in the user as a problem solver; linkage involves the establishment of collaborative relationships with external resource agencies in bringing about changes in organizational structure or communication patterns that may or may not involve the adoption of a specific innovation. Thus, linkage expands the problem-solving capabilities in the users, effectively bringing outside resources to bear on solutions to the problem.

The Concerns-Based Adoption Model (CBAM) presented in this paper is also eclectic. It uses concepts from linkage as well as processes from the Research, Development, and Diffusion Perspective and from the Problem-Solver Perspective.

In contrast to linkage, however, CBAM assumes that a specific innovation will be adopted. The model is most directly related to the R, D&D Perspective, where emphasis is upon the trial use of an innovation, its installation, and ultimate integration into the normal operating structure of an institution.[10] While assisting an institution to develop its capacities to change, CBAM is not directly concerned with organizational development, per se, but rather with innovation adoption. It places primary emphasis on an adopter's collaboration with an external change, or resource, agency. Further, it deliberately nurtures the problem-solving capabilities of the user as the process of adoption progresses and as the power to use an innovation is transferred to the user.

Significantly, the term "adoption" as used in CBAM differs from

Everett Rogers'[11] use of the term. Rogers uses "adoption" to label the process of deciding to use an innovation. Adoption, as used in this model, goes far beyond the initial decision to adopt; it closely parallels the Clark-Guba phases of trial, installation, and institutionalization. "Adoption," as it is used here, involves the multitude of activities, decisions, and evaluations that encompass the broad effort to successfully integrate an innovation into the functional structure of a formal organization such as a school, a college, or an industrial organization.

Origins of the CBAM

The CBAM has been constructed out of the experiences of the authors in innovation adoption in colleges and universities, public schools, and in industry. It has been constructed for the purpose of assisting others who engage in the process of innovation adoption. Further it provides a basis for empirical investigation of the adoption process.

The conceptual basis of the model draws heavily upon the work of Fuller[12] and her associates in their study of concerns of teachers. Fuller has identified a developmental sequence in which prospective and inservice teachers' concerns appear in a dependable pattern on a continuum from concerns about self to concerns about the task of teaching to concerns about impact on pupils. For example, a sequence of concerns of a preservice teacher occurring over time might be as follows: "Do I really know my subject matter?" (self-concern); "How do I present my ideas to the class?" (task concern); "Will I be able to challenge the more able students with this lesson while not losing the slower ones?" (impact concern).

Broadly speaking, the concerns hypothesis states that when an individual encounters a new situation that requires interaction with others, his behavior is initially governed by concerns about himself and the demands that the situation makes upon him. As these self-concerns become resolved, the individual moves to concerns focusing on the nature of the task and on the quality of task performance. Ultimately, the individual becomes concerned about the impact he is making upon others and strives to optimize his efforts for others.

The authors hypothesize that Fuller's developmental concept of concerns and their sequence can be generalized to the innovation adoption process. The experience of the authors has shown that the same or similar concerns phenomena do indeed occur in the adoption process. Examples of developmental concerns manifested in adopting an innovation include the following: "What will the Dean think of me if I agree to use these materials?" (self-concern); "How do you get students to return these manipulative materials to the right boxes and envelopes?" (task concern); "How could I share with other faculty the things I'm learning about students by using these new materials?" (impact concern). Further, it has been experienced that concerns, as a partial expression of an adopter's needs, provide both a diagnosis and a prescription for action. A change agent who recognizes self-concerns being expressed can initiate consultation or training that will result in resolution of self-concerns and move the person along the developmental sequence toward more effective use of the innovation.

CBAM - A Process Model

The Concerns-Based Adoption Model assumes the existence of two primary systems[13]--a user system and a resource system--and the establishment of a temporary third system, a collaborative adoption system. Basically, the model presents a conceptual framework for a multi-stage decision process (i.e., a series of hierarchically ordered decisions related to the sequential phases of the adoption process) that involves these three systems (see Figure 1).

Insert Figure 1 here

Resource System

The resource system is an agency or institution that has the capability to assist the adopters of an innovation. In the beginning of the collaborative adoption process, the resource system is the senior partner in the collaborative system. The seniority, if you will, is based on the fact that the resource system has more knowledge about the innovation than the user, more experience with the innovation, and a repertoire of materials, strategies, and consultants, and change agents who are both knowledgeable about the innovation and skilled in the change process.

The seniority of the resource system is hopefully short-lived, for the purpose of collaboration is to transfer power, knowledge, and skills to the user system. The goal is to assist the user to become independent from the resource system. Independence has been achieved when the user

system has fully assimilated the innovation, provided for its continuation and support, and is capable of maintaining it on its own. By the time independent use of the innovation has been reached, and perhaps earlier, the user has no further need of the resource system.

User System

The term "user system" refers to the adopter of an innovation. The user system is an organization, institution, or in some cases an individual interested in committing human, financial, and environmental resources to the adoption of an innovation. A major assumption of the model is that user systems have full knowledge of the resources available to them, that they are aware of their own needs, and that they have reached a decision to adopt specific innovations as solutions to their identified problems. During the early phases of the adoption process, the user system is in a "reception mode." That is, it seeks information, support, advice, and intervention from the resource system to initiate and monitor the innovation adoption. As time passes, the user becomes more powerful and relies less on the resource systems as it successfully adapts an innovation to its own situational requirements.

Collaborative System

The collaborative system is the joint activity of resource and user systems that creates a third-force system to facilitate the adoption process. The collaborative system does not necessarily occupy a space or have financial resources of its own. It is temporary in that it has a

life expectancy equal to the time required by the user system to achieve independent use of the innovation.

The decision processes employed by the collaborative system refer to joint decisions made relative to innovation adoption. As pointed out above, the resource system will undoubtedly assume a more powerful position early in the adoption process. As time passes, however, the user system will gain in confidence and power and will assume greater responsibility for decisions.

The collaboration is realized as both systems engage in an analysis of needs, an identification of concerns, and an analysis of current use of the innovation. Following these analyses interventions are designed to alleviate needs, resolve concerns, and facilitate and accelerate the innovation adoption.

The CBAM Process

The structure of the model is based on the formation by the change agent of temporary channels linking user and resource systems to create a collaborative system for adoption. The collaborative system thus formed provides for continual reciprocal feedback processes between the user and resource systems. There are two formally distinct classes of channels mediating the user and resource systems: information and action. In practice these channels may not be at all distinct, but for purposes of conceptual analysis they are kept separated since each has functional properties different from the other. The role of change agent derives fundamentally

from the functional properties of the linkage channels. In the information mode the change agent is performing as a relatively complex sensor system gathering data on the user's needs, capabilities, concerns, and usage regarding the innovation. All these data need to be processed, analyzed, and interpreted. The change agent calls upon the resource system for assistance with such information processing. The results of analyses of user concerns and usage together with an understanding of the user's needs and capabilities culminate in an evaluation of the user's state of preparedness and the selection and recommendation of appropriate actions and treatment to be initiated by the change agent.

On the action side the change agent will be actively and continually probing for concerns in the user system since, as we have hypothesized, this is a major variable that must be dealt with in catalyzing the adoption process. Other catalytic action processes carried out by the change agent will be to furnish orientation, training, and consultation to the users with whom he is engaged. The change agent will also be engaged in assisting the users to resolve their concerns and finally he will be instrumental in helping the user to implement treatment strategies leading to higher levels of use of the innovation.

Scales for Use and Concern

The particular strategies used to establish collaboration depend upon the stage of readiness of key individuals or groups within the user system. Readiness of user system personnel is determined by the

stages of concern expressed by users and by their level of effective use of the innovation.

As the change agent interacts with the various individuals within the user system, he is able to catalog their expressed concerns. At the same time, the change agent can catalog the demonstrated level of use of the innovation.

Differential Level of Use

For each component of an innovation (e.g., self-paced instruction, faculty teams as components of competency-based education), there are definable and observable differences in the ways the innovation is used by the various individuals and/or groups associated with it. These differences have been categorized in a hierarchical scale called "Levels of Use."

Six levels of use of the innovation and an absence-of-use level have been defined. These levels and the accompanying scale points were derived from an analysis of the extensive first-hand experiences of the authors with innovation adoption. For each level of use two scales have been identified: knowledge and action. This differentiation is essential because while knowledge is a necessary condition for action it is no substitute. The knowledge scale classifies the breadth and depth of knowledge related to the innovation as possessed by each individual user. This can be assessed formally or informally. The second scale, action, is a classification of how advanced the subject is in actual use of the innovation. Direct observation of the user in interaction with the innovation is required for this scale.

The following is a listing of the Levels of Use and the accompanying knowledge and action scale points.

Insert Table 1 about here

Extensity Profile

When considering the adoption of an innovation within a formal organization, it is not sufficient to have just one individual, in his singular job function, demonstrating a high level of use of the innovation. More than likely within an institution, as a user system, many individuals and groups are expected to be using the innovation. Therefore, in addition to the question of how well a particular individual is using the innovation, all individuals and groups within the user system must be assessed before a statement can be made about the quality and extent of adoption within the total user system. Optimal institutionalization of an innovation must consist of all the associated individuals and groups that are involved in using the innovation demonstrating high-level use of the innovation. The degree of spread of involvement with the innovation and the quality of use of the innovation by all elements of the user system can be represented in an Extensity Profile.

Figure 2 is an Extensity Profile of University X, which is in the process of establishing a competency-based teacher education program. This Extensity Profile was compiled at the end of the second year of adoption by assessing the knowledge and action scale points for levels of use for

each individual using one of the module components. As can be seen in the profile, those instructors using the science modules have more advanced use than do the instructors using the language arts modules. Both faculties began use of the innovation at the same time.

Insert Figure 2 about here

If, in another example, the innovation was interdisciplinary faculty teaming an Extensity Profile could likewise be constructed with the unit of analysis being composite groups (i.e., faculty teams) within the institution as opposed to individual faculty members as shown in Figure 2.

Extensity Profiles can be plotted at critical moments ranging from the orientation of the first individual within a user system through when the entire user system demonstrates high-level use of the innovation. These profiles provide a documented case history of the rate of spread of use of the innovation and the rate at which the level of use of the innovation increases within that user system. The Extensity Profiles can be compared so that individuals may be identified when they are not progressing at the expected rate. These individuals can then be contacted to determine what, if any, problems they are encountering in using the innovation.

Stages of Concern about the Innovation

From the first moment a complex innovation such as competency-based teacher education or Individually Guided Education is introduced to a user system, the various individuals and groups of individuals who comprise that organization will, to some degree, check out at least the following:

(1) How congruent the innovation is with their value systems, present and possible job functions, and skills; (2) How congruent the innovation is with institutional goa's, structures, and resources; and (3) How congruent any possible changes in the institution are likely to be with their personal goals.

As the user system progresses from exploration, to trial use, to institutionalization of the innovation, the various individuals and groups involved in using it will be acquiring new knowledge and learning new skills. In attempting to advance their level of use of the innovation, they are going to experience problems, frustrations, and knowledge voids. They will also be encountering various interaction conflicts between themselves, the institution, and the innovation.

The overt manifestations of the initial checking-out process, the subsequent knowledge and skill needs, and the problems encountered in preparing for and actually using the innovation will be observed as expressed concerns. The construct of concerns, as used here, refers to the categorization of expressions stated by the user related to his use of the innovation. A developmental progression of these concerns is proposed here. This progression has been labeled "Stages of Concern." As has been found with preservice teachers[16], the concerns expressed by individuals adopting an educational innovation within institutions progress from a focus on self, to task, to impact. This progression is seen as parallel to the developmental progression of Levels of Use of the innovation. Further, it is believed that these concerns can be categorized as to kind. This does not mean to suggest that individuals when first involved with

an innovation have no concerns about students, but rather that the intensity of task and impact concerns is much less than the intensity of self-oriented concerns. As the individual has his early, more intense self-related questions resolved and as he gets more and more into using the innovation, the intensity of innovation use (task) and student (impact) related concerns increase.

The following is a brief definition of each of the concern stages. For each stage, scale points are defined as a basis for classifying the observation made.

Insert Table II about here

As the adoption process unfolds, each individual's use of the innovation should progress toward sophisticated levels, and concomitantly, the stage of concern should progress toward renewal concerns. The change agent who is knowledgeable about the developmental state of each individual and of the composite user system can anticipate the next potential problem areas and can personalize his interventions to be most relevant to current concern and use as well as to be anticipatory of upcoming concerns and use.

The concerns stages are determined by talking with the individual users or by reading their correspondence and analyzing what they are worrying about, the problems they report having, the information or help they request, and what they are pleased with.

Determining Levels of Use of an Innovation requires direct observation of it in use and a direct assessment of the user's knowledge. Assessing

Stages of Concern about an innovation can be done indirectly through analysis of the user's reported observations, requests, problems, and successes.

If the innovation happens to be a complex bundle such as competency-based teacher education with faculty teaming, then assessment of stages of concern will also be a complex bundle. Multiple sets of concern progressions can be identified, including a set for each curriculum faculty member about his use of modules, a set for college administrators about administering resources, and a set for the interdisciplinary faculty teams about team roles. It is also possible for a person to express simultaneously concerns at different levels in association with different facets of the innovation. For example, an adopter may be at a late stage of concern (maximum benefit) with respect to science modules and at the same time be at a lower stage (exploration) with respect to faculty teaming.

Relationship Between Stages of Concern and Levels of Use

Both Levels of Use and Stages of Concern are aspects of the same developmental process. At each level of use there should be a congruent stage of concern if adoption is progressing satisfactorily. The relationship of Stages of Concern and Levels of Use is shown graphically in Figure 3. Stages of Concern and Levels of Use are plotted against each other on corresponding scales of time.

Insert Figure 3 about here

The graph shows an ideal set of successful adoption behaviors contained in an envelope bounded at the top by a line that limits extreme concerns and

at the bottom by a similar limitation on levels of use. This is another way of saying that the CBAM allows for a certain amount of discrepancy between concern and use levels and that such discrepancies are expected in the adoption process. The tolerable limits of this discrepancy are generally at a point one step above and below the mid-line decreasing to a single point at the beginning and end. Outside of these limits, the adoption process cannot be sustained to a successful conclusion.

Optimally, stages of concern will run ahead of levels of use, especially in more dynamic situations. When the reverse is true--when use is preceding concerns--the change agent must step in with strategies designed to raise the users' concerns to a more mature level in order to lend more relevance to the adoption process.

Note, however, that an isolated notation of a stage of concern or level of use will be insufficient evidence for decision-making relative to intervention. Change agents need to note and draw out the interplay among the concerns and use data and seek confirmation of their readings with further data-gathering and dialog. The growth process in innovation adoption is both complex and cyclical, and these factors need to be taken into account. For example, while an innovation adopter may be at advanced stages of concern and high level of use with respect to his individual role in using an innovation, he may be at much earlier stages of concern and use with respect to his role as a member of a functioning group.

The reason why the relationship between Stages of Concern and Levels of Use is critical is that it holds the potential for dramatically decreasing

the time required to complete the adoption process and reach institutionalization of an innovation. Also it may prevent the adoption process from aborting. A stage of concern carries with it an indicator of action, for imbedded within a concern is its means of resolution. If an individual adopter is expressing or manifesting self-concerns and a correlative initial training level of use, it is imperative that the self-concerns be resolved in order to move to the mechanical level of use.

The concept of concerns is related to the concept of readiness, which has long been part of the educational literature. Stages of Concern, as presented in this model, have an appeal due to the simplicity and explanatory power of the concept. The simplicity is deceptive, however, for concerns are only part of the need structure of an individual. The user of an innovation can have concerns that are tangential to the innovation, or perhaps concerns need to be generated and shaped in him so that he may use the innovation more effectively. Further, concerns are transitory phenomena, constantly changing with respect to an innovation within a unit of time (a week or day) as well as across time (the duration of the adoption process). It is also possible for a user to have reached mature concerns with respect to use of an innovation and then to revert to early concerns as the innovation moves into an adaptation phase.

The people who must interpret these data and keep the adoption process clicking stand at the juncture of the resource and user systems. They are the change agents, or more appropriately the adoption agents, who manage the collaborative adoption system.

The Adoption Agent

The key role in the resource system's relationship with the user system is played by the external change agent, or "adoption" agent. The term "adoption" agent is proposed here since the agent is facilitating the adoption of an innovation rather than being innovation-free. He is concerned with changes in the individuals, in the user system as an organization, and, if need be, in the innovation itself that will lead to attainment and continuance of a high level of use of the innovation by the user system.

The adoption agent becomes "quarterback" of the collaborative adoption system. In all probability the user system has a "quarterback-in-training" who becomes the counterpart of the resource system's adoption agent and who is the chief liaison agent for the user system. For ease of reference we call the resource system's adoption agent the "external adoption agent" and the user system's liaison agent is called the "internal adoption agent."

The external adoption agent plays a role of diagnostician, trouble-shooter, consultant, and action coordinator for the collaborative system. In this role he is performing the functions described by the left-to-right arrows at the top half of Figure 1. As a diagnostician he must seek to identify the readiness state of the user system. In this regard he must gather information about the Stages of Concern and the Levels of Use displayed by relevant members of the user system. His diagnosis must be confirmed by his counterpart, the internal adoption agent, in order to set the stage for action. As a trouble-shooter, the external adoption agent must transform his data about user's needs and readiness into tentative

action plans designed to resolve concerns, satisfy needs, and advance the level of use of the innovation. Alternative action plans are presented to the internal adoption agent and a decision is made to undertake some remedial or developmental activity to promote effective use of the innovation.

The external adoption agent acts as a coordinator with respect to the resource system personnel and the agreed-upon action plan. In this role he is performing as described by the right-to-left arrows at the bottom of Figure 1. He arranges for training, consultation, workshops, data-gathering, and a multitude of actions that will further the trial use and installation of the innovation. It is in this role of coordinator that the "quarterback" function is critical. Since the external adoption agent is experienced with the innovation and with the dynamics of planned change, he serves a vital role of consultant to the user system. He can anticipate "trouble spots" before they arise and can counsel the internal adoption agent or other user system personnel as to how they might be avoided. By the end of the collaborative adoption process the internal adoption agent should have developed many of the same innovation-related skills and expertise that the external adoption agent had at the beginning.

Thus the adoption agents embody the process of the model. They stand at the intersection of the resource and user systems, forming the nucleus of a new and unique collaborative adoption system. Their major tools are their experience and their sensitivity to the developmental process taking place in the user system--a sensitivity vastly augmented by employing the scales of Level of Use and Stages of Concern.

Implications for Adoption Agents

The developmental concepts we have described should be of immediate use to practicing adoption agents. Regardless of whether the agent is external or internal, he should be able to try the process of observing and identifying Levels of Use of the innovation and Stages of Concern about the innovation. Assuming the agent is working with adopters over an extended period of time rather than in a piecemeal, or one-shot fashion, he should be able to place his clients along the developmental continua of the CBAM.

Even in its theoretical state, the CBAM can provide the practicing adoption agent with strong clues as to the necessary interventions and the potential relevance of such interventions to user's concerns. A general rule of thumb would be that consultation and structured training are the most relevant intervention strategies to be used when concerns are at the exploration and early trial stages and the use is at initial training or mechanical levels. Demonstration and consultation are likely to be most relevant at the later phases of early trial concerns and at the limited impact concerns stage. Constant probing or questioning, personal consultation and promotion of dialog within a user system are vital adoption agent strategies at all stages of concern and use.

An adoption agent must be able to keep the total adoption process in perspective. He must be aware of distant, ideal outcomes, and at the same time he must have a realistic awareness of the user's present developmental state and even be empathetic with that state. For example, experienced teachers who have been accustomed to self-contained classrooms and who are

involved in their first year of team teaching will undoubtedly have many self-concerns about their new role as team members. If this new pattern of organization also involves the adoption of new instructional programs, it adds further to the intensity of self-concerns. An adoption agent should carefully assess the level of self-concern of the teachers and provide supportive experiences or training that are most relevant to their concerns and highly related to the level of use of the innovation (there may be a general tendency for many adoption agents to want to treat the use level only). To ignore lower-level concerns and provide training that is more related to limited impact concerns and independent level of use of the adoption is to invite trouble and further intensify rather than diminish self-concerns. Above all, the adoption agent can use the CBAM in its current state to remind himself that successful adoption of an innovation is a developmental process and that process is expedited and made more efficient when concerns and use are assessed and related intervention strategies are employed.

A Case Study of CBAM Usage

At this point, a brief case study is presented of a CBAM-oriented adoption agent working in a middle school. The case study represents an exploratory application of the model as conducted by one of the authors in the early phases of CBAM formulation. The setting was a middle school in the early planning and implementation stages of adopting an individualized instruction program in reading and mathematics, along with the introduction

of differentiated staffing patterns in these two content areas. An external adoption agent, John Babb, from a nearby Title III Center had been working with the middle school teachers and administrators during its exploratory and initial planning stages leading up to the beginning of the case study.

John visited the school in the late spring of the planning year. The teachers and principal were preparing to change from their self-contained classrooms to a faculty-team organization. A major change involved faculty-team planning and team responsibility for larger groups of students than had been the custom in reading and mathematics. In conversations with the teachers in the faculty lounge, John heard such comments as, "I don't know if I can work in this new arrangement, I'm not sure what the demands of the situation will be on me." "It might work in the York Middle School, but I'm not sure it will work here; I'm not sure how we can handle a hundred and twenty kids in Reading and know where they all are."

The above comments were typical of the self-concerns expressed by teachers in the middle school as they began to position themselves for the new organizational pattern in the new program. John made mental notes of these concerns and engaged in discussion with teachers, assisting them to communicate their feelings in order to resolve their self-concerns. He knew that telling them not to fear the innovation would be fruitless; rather, expression and analysis of the source of concerns would allow him to intervene effectively when an appropriate training experience could be provided.

John observed a planning meeting later in the day and noted the following:

1. The principal did most of the talking during a discussion about the faculty-teaming process in the individualized instruction program; the teachers were mostly passive participants in an abstract discussion.

2. Only three teachers spoke at the meeting while twelve teachers sat silently.

3. One teacher busily occupied herself grading papers.

4. A student-teacher was attending for one of the Sixth Grade teachers who was to be responsible for the math curriculum.

5. Some of the questions discussed at the meeting were:

    1. On what basis would space be assigned to each team and would we have a homebase?

    2. What can we expect of our teacher aides?

    3. How will I know how well my pupils are doing if the aides correct all the papers and post the ranks?

    4. Will we have enough time for planning?

    5. Who will be stuck with the low-achieving groups.

John kept in mind the fact that two different innovations were being introduced simultaneously and that the teachers had no real experience or training for what they were to do.

In his discussions with teachers and the principal and on the basis of his observations, John identified that the majority of the concerns expressed were <u>exploration</u> concerns about the staffing innovation and <u>early trial</u> concerns about the curriculum innovation itself.

Following the meeting, John sat down with the principal and engaged in a discussion about his observations in order to identify the concerns and issues that the teachers had about the two innovations. Specifically, he

suggested to the principal ways the faculty could become more actively involved in the decision-making process about the program and its implementation in future meetings. Diplomatically, he pointed out that the behavior of the principal to a large extent was basically intensifying the faculty's self-concerns. If the faculty were to be more intensively engaged in arriving at their own solutions, John suggested that their self-concerns might be resolved more quickly. Because of his knowledge about the innovation and his prior experience with it, John was able to assist the principal to gain perspective on the developmental aspects of the adoption process in terms of where the faculty was then on the Level of Use and Stage of Concern continua and what the next stage was likely to be. Further, he assisted the principal to explore ways in which available resources might be applied to the resolution of the self and task concerns of the teachers so that an effective adoption of the innovation would be achieved.

John and the principal decided to talk with the superintendent of schools about alternative steps that might be taken to facilitate the rate of innovation adoption. The superintendent, the principal, and John jointly agreed to explore the prospects of expanding a planned summer workshop. They planned to add an additional two weeks to the four-week curriculum workshop. The revised workshop would include "trial installation" of the individualized curriculum and faculty-teaming. John agreed to explore with his Center the prospects of identifying human and material resources that the Title III Center could bring to help in the expanded workshop.

Tentatively, agreement was reached to identify the resources to include students as part of this summer workshop. Originally, the workshop had been planned only for curriculum development efforts. Based on the diagnosis of the concerns of teachers and the use level of the innovation, John persuaded the school officials that teachers needed some direct experience with the innovation in a "fail-safe" setting prior to the opening of school in the fall.

The school department and the Title III Center proceeded to plan and implement a summer workshop designed for self-concerns resolution and trial use of the innovations. The workshop was collaboratively designed so that students attended instructional sessions in the morning dealing with a "trial curriculum." During the morning all teachers and administrators were engaged in one of three activities of planning, teaching, and observing implementation of the curriculum. The roles of the teacher changed over the six-week period so that each teacher had an opportunity to teach using a specially designed model of the curriculum that was exactly like the one to be used in the fall. Therefore, teachers received experience with planning and teaching the new curricula and with the related problems of monitoring student progress and evaluating instructional outcomes. As the teachers planned for their instruction, they were actually engaging in team-planning and team-building activities that were requisite for successful implementation of differentiated staffing and the curriculum innovation. The afternoons of each workshop day was devoted to development of materials and organization of supplementary materials so that the

opening of school in September would be smooth. During the course of the summer workshop, the teachers and the faculty-teams gained experience in setting agenda, assigning responsibilities and tasks during the team meetings, along with the wide array of communication and team-building skills that are required for effective use of the innovation. By the end of the summer workshop, the self-concerns of the teachers had been considerably resolved and they were approaching the independent level of use of the two innovations.

This brief case study reflects actual experience of the authors in using Stages of Concern and Levels of Use of the innovation with an in-process innovation adoption. The case study points out that specific intervention strategies were designed by both the user and the resource system (the school and the Title III Center) to resolve the concerns and to increase the level of use of the innovation. The model, then, provided the adoption agent with the data he needed to diagnose the situation and prescribe appropriate treatment to facilitate effective innovation adoption.

Reflections Upon the Model and Its Use

As the authors reflect upon the use of the model and its development, several things come to mind. First, the model is not just an abstract conceptualization of the process of educational change; it is a dynamic tool that has grown out of rich experience in helping teachers and administrators to adopt new programs and organizational patterns. CBAM has practical utility and perhaps its greatest contribution is in assisting

educators to use innovations more effectively and more quickly.

The major constructs of concern about and use of an innovation are easily communicable to the profession--yet they are deceptively simple. At a general level the concerns and use variables are helpful; from a research perspective, however, the concerns constructs are developmentally complex and involve difficult measurement problems related to intensity of concern. The general levels of use are also deceptively simple concepts. Each innovation has its own set of interactions among learners and instructors and its own "effective use" criteria. The use data require that an adoption agent and a user have clearly specified operational statements of ideal innovation usage.

It may seem to some readers that conceiving of the adoption process as a "growth continuum" for individuals and institutions is of little significance. However, the authors firmly believe that failure to view the innovation adoption as a growth process related to a specific innovation may account for the "blunting" effect noted by Goodlad. The field of social psychology and organizational development provide the contextual variables that comprise the change process; however, these fields do not have the adoption of specific innovations as a goal. CBAM provides a set of variables drawn from a different value stance and different implementation procedures and a different research perspective. Hopefully, the combined use of CBAM and other models and procedures drawn from these multiple perspectives can help us get through the schoolhouse door and provide learners, instructors, and administrators with effective tools for personal,

professional, and institutional growth and effectiveness.

CBAM was developed out of a concern that the innovations of the 60's were and are not well used. As our research in this important area of educational innovation adoption continues, it is our hope that our concerns about the effective use of educational innovations are diminished.

We have shared the Concerns-Based Adoption Model with the profession at this time in the hope that it will be of use to practicing adoption agents and will stimulate others to think about and study innovation adoption from this perspective, and particularly to examine the process relationships between the stages of user concern and the use of the innovation. We will continue in our efforts to refine and simplify the model. We invite others to join the effort.

Footnotes and References

1. The writing of this paper and the investigations underlying it have been supported by USOE/NIE contract NE-C-00-3-0066, The Research and Development Center for Teacher Education, The University of Texas at Austin.
2. The authors wish to acknowledge the editorial assistance of Dave Wilson.
3. John I. Goodlad, "The School vs. Education," Saturday Review, 52(16) (1969): 59-61, 80-82.
4. In this article, the term "adoption" refers to a developmental process of introduction, trial usage, widespread installation, and ultimate assimilation of an innovation into the normal operating structure of an institution such as a school system or college.
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11. Rogers and Shoemaker, 1971.

12. Frances F. Fuller, "Concerns of Teachers: A Developmental Conceptualization," American Educational Research Journal 6, no. 2 (March, 1969): 207-226.

13. A "system" is made up of a number of components organized to achieve a set of objectives. A "systems approach" is a way of thinking about the component interrelationships in the total system [ref. C. West Churchman, "The Systems Approach" (New York: Dell Publishing Co., 1968)].

TABLE I: Levels of Use of the Innovation

0 Non use: State in which the user does not know that the innovation exists.

Knowledge	Action
1. No knowledge of the innovation or any other similar innovation.	1. No action is being made either to individually develop or find out about efforts in the area.
2. Has general knowledge that there are efforts to develop innovations in the area.	2. Solicits general information from various sources about any efforts that are going on.

I Orientation: State in which the user is acquiring information about the innovation, its value orientation, its demands upon him, and the user system.

Knowledge	Action
1. Knows name and source of innovation.	1. Solicits descriptive information about the innovation.
2. Knows where to get sufficient information to formulate decision alternatives.	2. Solicits actual materials and analyzes them.
3. Has sufficient information about innovation and its implementation requirements to make a go/no-go decision.	3. Makes an informed decision to use the innovation or not to use it.

II Initial training: An action stage in which the user is being trained in the logistics and use of the innovation.

Knowledge	Action
1. Knows time requirements for training; knows general logistics and requirements for use of innovation.	1. Examines materials in terms of training mode and duration.
2. Knows components of innovation and its general characteristics	2. Studies actual materials for learners and instructors to acquire knowledge and skills.

3. Knows content of innovation for learners and general instructional and logistical requirements for professionals.	3. Prepares to initiate pilot project and engages in tryout of innovation.

III Mechanical: A stage of innovation implementation where users are engaged in pilot use of the innovation. The user is engaged in a step-wise attempt to master the tasks required by the innovation, often resulting in disjointed and superficial use.

Knowledge	Action
1. Knows only on a day-to-day basis what the innovation demands.	1. Implementation demonstrates lack of effective management and lack of anticipation of immediate/intermediate consequences.
2. Has sufficient knowledge to cope with the minimal daily requirements of the innovation.	2. Demonstrates control over day-to-day use of innovation but lacks ability to plan beyond that.
3. Knows detailed information about the innovation, its content, and its potential.	3. Handles well the mechanical aspects of the innovation, yet fails to attend to impact of the innovation on learners.

IV Independent: A state of innovation usage where the user handles the innovation well as an individual with quality impact on learners in his immediate sphere of influence, yet fails to integrate his work with the total system's effort.

Knowledge	Action
1. Knows the cognitive effects of the innovation on the learner and the relative effectiveness of alternate practices.	1. Explores and experiments with alternate combinations of innovations with existing practices.
2. Recognizes affective responses of learners as a result of his manipulation of methods with the innovation.	2. Examines impact of various combinations of existing methods and innovation elements on his students.

3. Knows cognitive and affective effects of innovation on his learners and how he can get the most out of the innovation for learners.	3. Maximizes learner involvement with innovation by adopting flexible elements of the innovation.

V Integrated: Stage in which the user is actively seeking ways to combine his efforts in using the innovation with colleagues to achieve a collective impact on all learners within an institution.

Knowledge	Action
1. Has minimal knowledge of how others are using the innovation.	1. Seeks out information from colleagues about what they are doing and develops tentative plans for coordination with them.
2. Has good understanding of what colleagues are doing.	2. Experiments with alternate patterns of use of the innovation based on collaboration with colleagues.
3. Knows how his use of the innovation and others' work can provide maximum impact for learners.	3. Implements most effective system for the innovation, which employs successful collaborative efforts and yields a high degree of impact on learners.

VI Renewing: The stage of use of an innovation in which the user re-evaluates the quality of use of the innovation, seeks new alternatives to achieve impact on learners, examines new developments in the field, and identifies new goals for himself and the institution.

Knowledge	Action
1. Has experiential knowledge of other innovations and their potential use in his situation.	1. Begins to experiment with sophisticated adaptations of the innovation in order to achieve more effective impact on learners.
2. Has knowledge of innovations in his own and related fields and their implications for improving the quality of learning within his institution.	2. Seeks out new alternatives to enhance or replace the innovation.

3. Has broad knowledge of emerging alternative goals and means for education and the culture and perceives the dynamic role of his work and his institution as a vital part of the social system.

3. Systematically evaluates effectiveness of innovation and reappraises goals while seeking more effective means and perhaps new goals in the pursuit of optimal learner impact.

TABLE II: Stages of Concern About the Innovation

0 Unaware: No indication of awareness that the innovation exists. There may be interest in similar innovations or a complete absence of awareness or interest in the area.

1. No indicators of interest in learning of new things in area that innovation is a part of.

2. Interest in learning of things in the area is expressed.

I Awareness: Indicates a general awareness of the innovation. The potential adopter is likely to inquire about obvious characteristics of the innovation and of himself in relation to it in various non-specific ways (e.g., expressions of general feeling toward innovation, limited evaluation, passive, passing interests in it) may even include expressions of concern about possible personal conflict or threats toward self and personal status quo.

1. No need expressed, passive, no further interest, no questions.

2. Expresses a need to learn more of a general nature about the innovation and getting a broad superficial overview. What does the innovation look like in general to me and my "program?"

3. Expresses need to learn more specific information. How do I learn more detail?

II Exploration: Indicates exploration of the roles played by the individual user and of the demands placed upon him; also includes exploration of role in relation to the reward structure of the organization and exploration of potential conflicts with existing structures or personal commitment that have financial or status implications.

1. Expresses fear, wory, doubt about the future role he must play if innovation is adopted. Worries relate to self, self in structure, and personal or professional rewards.

2. Expresses ambivalence toward the innovation, his role in relation to it, and its effect on the institution's social and professional structure.

3. Expresses questions of a constructive, problem-solving nature in relation to his role, place in the structure, and personal and professional future. Queries reflect a commitment toward the innovation and a drive toward movement.

III Early Trial: Indicates user's exploration of his performance and manipulation of materials and time.

1. Expresses lack of confidence in his ability to carry out his role with the innovation. Expresses discomfort about his ability to handle the organizational aspects of the innovation.

2. Expresses uncertainty about the use of the innovation and tends to interpret materials too literally; requires confirmation that his actions are proper.

3. Expresses general confidence in using the innovation but probes details of organization, sequencing, etc., to make operational use of the innovation more efficient.

IV Limited Impact: Indicates user's exploration of impact of innovation on clients in his immediate sphere of influence.

1. Expresses a need to insure that learners are receiving what they need to function effectively with the innovation; seeks confirmation that he is doing an effective job with the innovation.

2. Expresses desire to identify means by which the learners can gain more from the innovation the next time it is used; seeks to become more effective by eliciting feedback from learners.

3. Expresses need for learners to be able to relate their experiences with the innovation with broader goals of the course; recognizes a personal need to become more knowledgeable about the total operation within the program.

V Maximum Benefit: Indicates user's exploration of the total impact of the innovation in an institutional context on learners and users.

1. Expresses a desire to gain an understanding of what is going on within other parts of the institution in order to integrate more fully the learner's experiences with the innovation; expresses desire to seek effective working relationship with colleagues to further the goals of the innovation.

2. Expresses a desire to maximize the outcomes of the collective effort within the institution with respect to the innovation; expresses a desire to share his experience with others in order to increase the group's capacity to use the innovation.

3. Expresses a need to identify conditions that would tend to sustain the maximum level of output with respect to the innovation; expresses need to achieve full satisfaction for self and the group.

VI Renewal: Indicates user's exploration of new or better ways to reach the same goals or new goals.

1. Expresses desire to adapt the innovation in order to integrate the latest advances in the fields related to the innovation; expresses desire to acquire information and skill which will assist in maintaining current professional level.

2. Expresses need to explore and identify better means to achieve what is already effective output with respect to the innovation; expresses desire to incorporate new techniques into his professional repertoire.

3. Expresses need to keep himself and the institution open to new ideas, goals, and means of achieving maximum outcomes for learners and users; expresses desire for experiences that will broaden his outlook on his personal and professional life.

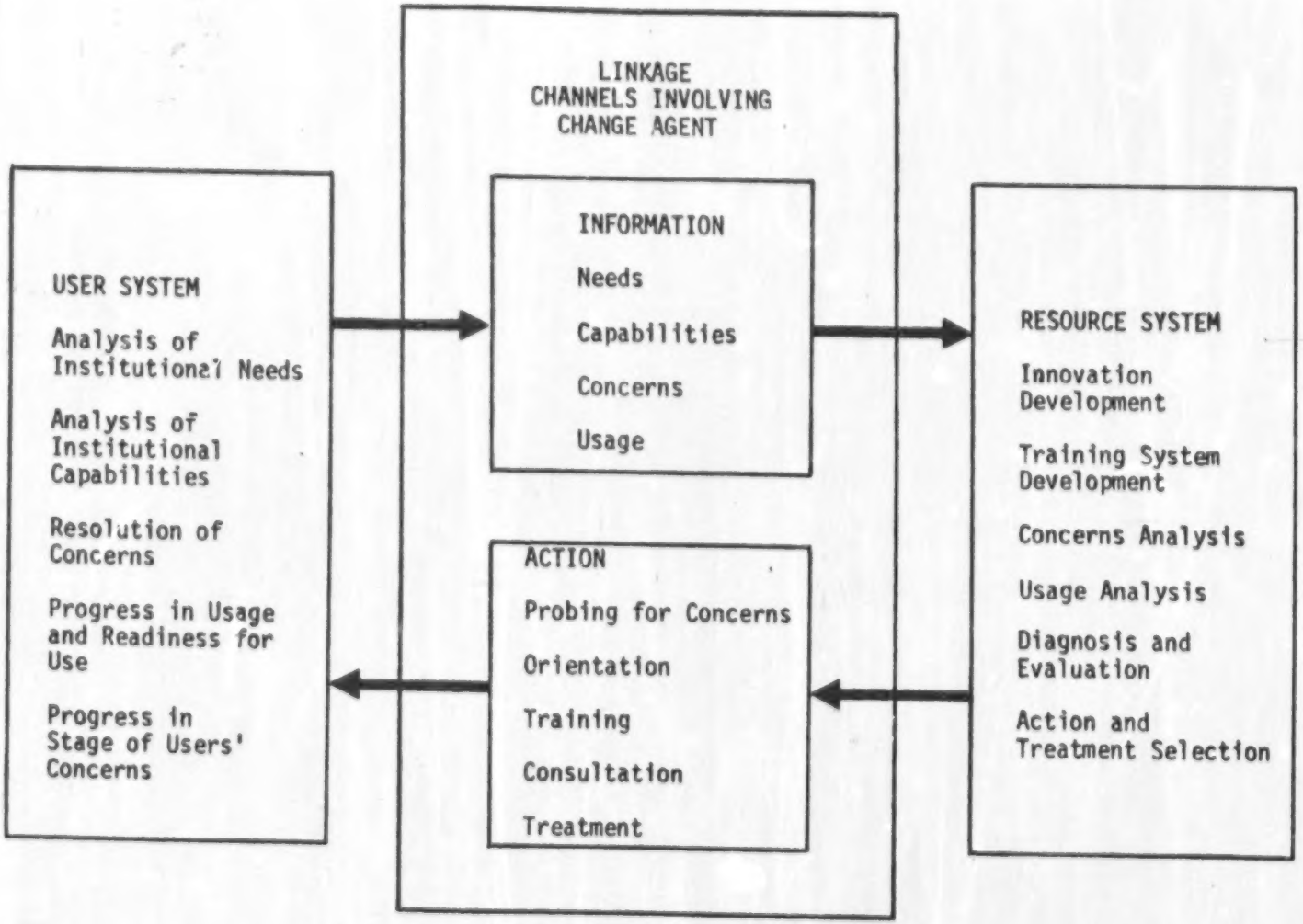

Figure 1. Conceptual structure and functional process organization of CBAM components.

K represents the Knowledge scale of use and A represents the Action scale of use.

The unit of analysis is the individual instructor. Names are added to the right of each component as new potential users enter the user system.

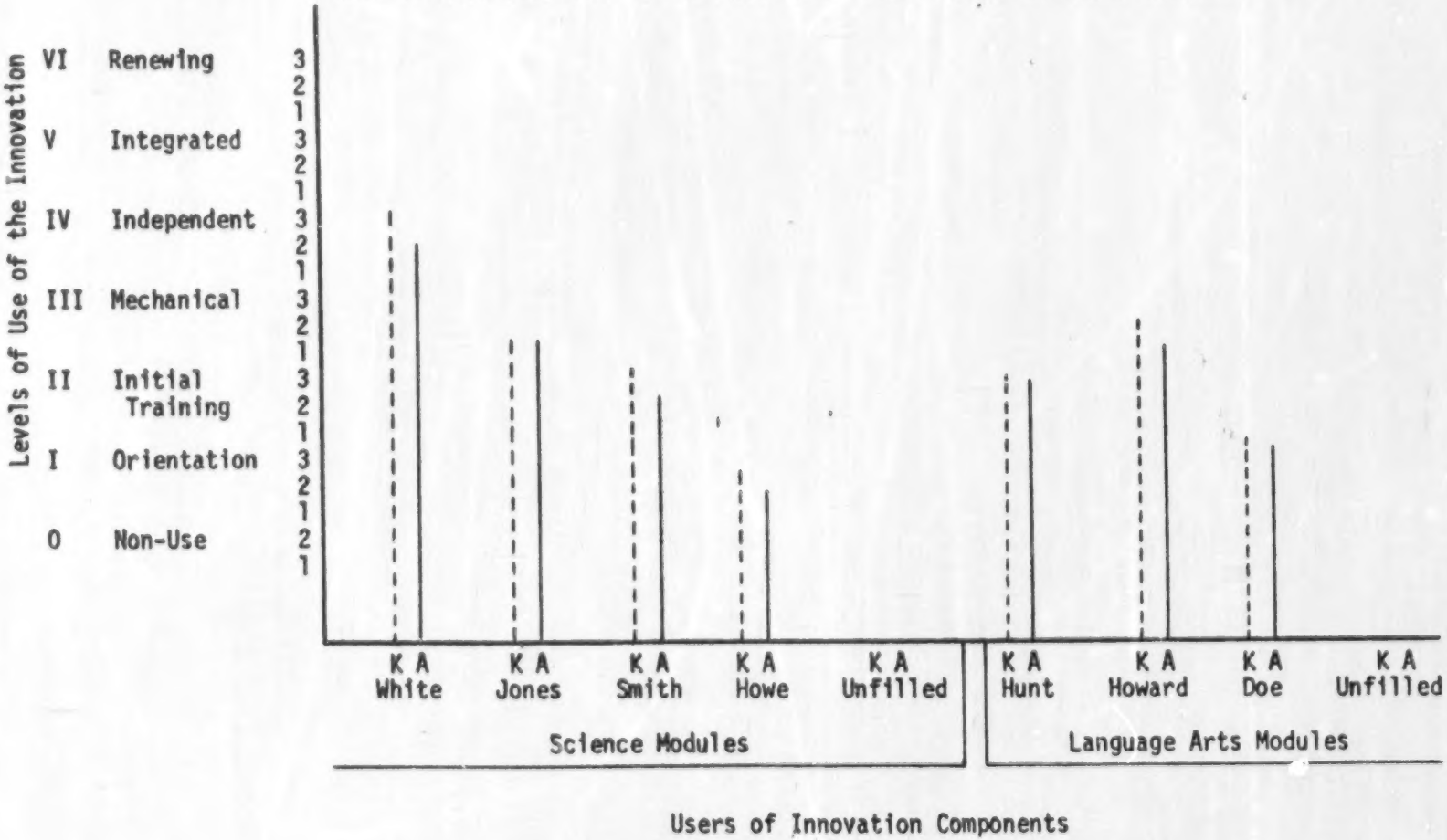

Figure 2. Extensity profile for university X after two years experience in using instructional modules

Research Questions

The application of the developmental construct of user concerns as a means of understanding, predicting, and controlling an adoption process is itself an innovation. We do not have as yet any controlled experimental data confirming its utility, but study and analysis of cases of adoption have allowed development of the concerns-based adoption model. The sensing analysis, interpretation, and resolution of users' concerns is postulated to be the key catalytic process in collaboratively guided adoption. Whether this will be borne out is the subject of empirical verification.

One measure of utility of any model should be its ability to generate critical research questions and hypotheses that can be empirically tested. There appear to be dozens, perhaps hundreds, of questions generated by the model. We have no way of measuring their absolute worth, but we present the following list of questions that seem important at this time and that seem to be uniquely associated with our approach to studying the adoption process.

1. Can the concepts applying to the development of individual organisms be used to represent the process of an institution adopting an innovation?
2. Are manifest concerns of the individual scaleable? Are they reliable?
3. Are the developmental stages in adoption discernable in usage performance or expressable as observed levels of use? Are usage observations reliable?

4. Can concern scores be used to reliably infer competence and confidence of the user at each level of use?
5. Can concerns analysis be used as the basis for treatment selection?
6. Can concerns analysis be used to predict when an individual is ready to progress to the next stage of development? Can the proper developmental strategy be selected?
7. Can a usage analysis be reliably performed and furnish evidence of an individual's readiness for the next stage of development?
8. Is there a characteristic pattern of concerns at each developmental stage?
9. Do events during the adoption process have temporal patterns that have diagnostic utility?
10. How can concerns and usage measures be aggregated to yield an institutional effectiveness score with regard to the specific innovation?
11. Can measures based on institutional needs, capabilities and concerns be made to yield a reliable index of adoption potential to predict relative success of an adopting institution with the innovation?

As experimentation continues, the authors assume that the concerns and use scales will be merged such that data on one scale, use or concerns, will be sufficiently predictive to determine an appropriate intervention strategy. It is also assumed that the scales will be greatly reduced in

complexity and that continued experimentation will yield identification of characteristics of intervention strategies that will generalize across innovations. For example, data might indicate that when a user is expressing self-concerns and his use of the innovation is mechanical, the most effective intervention is personal counseling from a change agent followed by joint preparation of a step-wise plan designed to move carefully from a mechanical to an independent use of the innovation.